1146-15-380 **Jillian L Glassett*** (`jillian.glassett@wsu.edu`) and **Judi J McDonald**. *Spectrally Arbitrary Patterns over Rings.*

A zero-nonzero pattern $\mathcal{A}$ is a matrix with entries from the set $\{0, *\}$. A square zero-nonzero pattern $\mathcal{A}$ is spectrally arbitrary over R, a commutative ring with unity, if all the monic polynomials from $R[x]$ are a characteristic polynomial for some realization of $\mathcal{A}$, i.e. if all possible spectrums can be realized. In this talk, I will discuss how the algebraic structure of rings affects how we determine if a pattern is spectrally arbitrary. I will also detail some of the results we found when considering whether a pattern that is spectrally arbitrary over a ring R will be spectrally arbitrary over a different ring S. These results establish that a pattern that is spectrally arbitrary over $\mathbb{Z}$ will be spectrally arbitrary over $\mathbb{Q}$ and relaxed spectrally arbitrary over $\mathbb{Z}/(m)$ for all positive integers m. Similarly, these results will establish the relationship of spectrally arbitrary patterns over the p-adic integers with the p-adic numbers and finite fields of order p. (Received January 27, 2019)